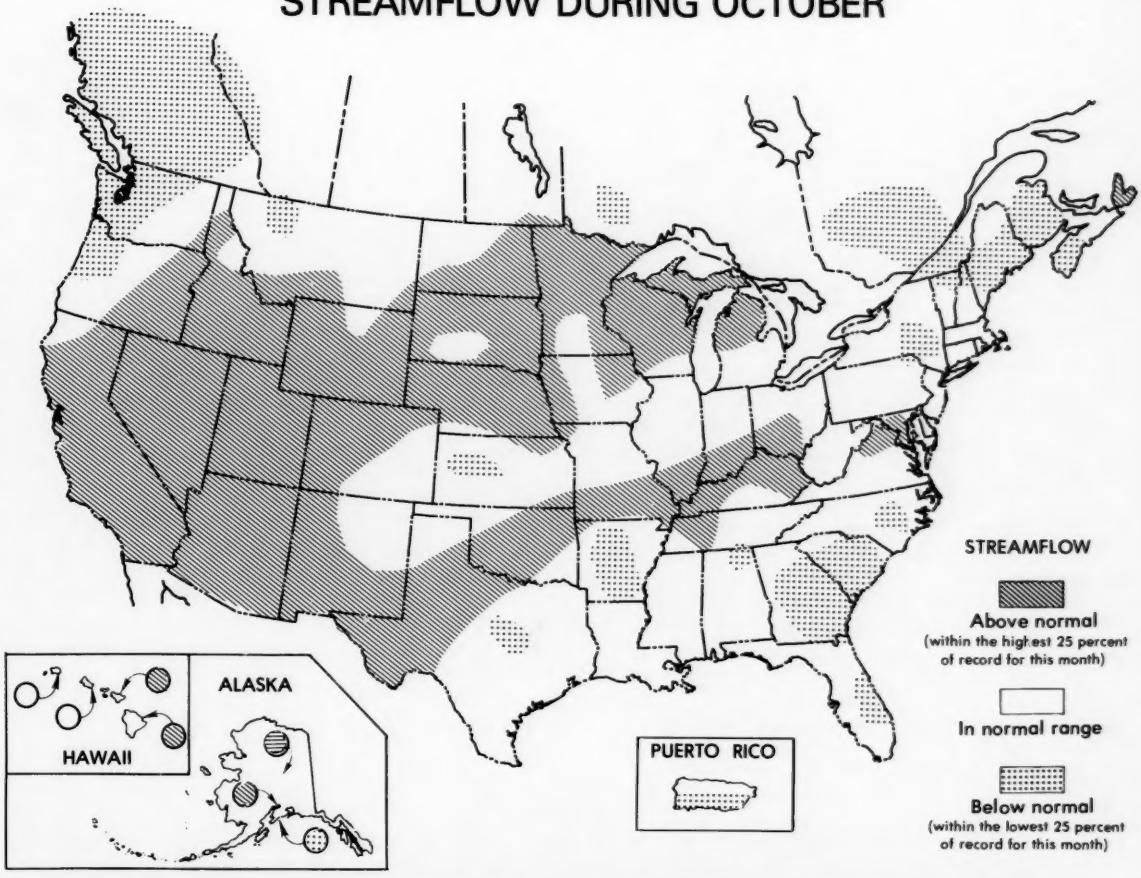
National Water Conditions

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

OCTOBER 1983

STREAMFLOW DURING OCTOBER



Severe flooding, the result of runoff from intense rains in Arizona, New Mexico, and Oklahoma, caused peak flow rates on several streams that had recurrence intervals that were greater than 100 years. Drought-stricken areas in west Texas received substantial rains as the remnants of Hurricane Tico moved north out of Mexico. Moderate flooding was reported in parts of Texas, Missouri, and the lower Ohio River basin.

Streamflow was in the normal range or above that range in most of the Nation during October. Small pockets of below-normal streamflow persisted in Kansas, Montana, Texas, Arkansas, and in several east-coast States.

STREAMFLOW CONDITIONS DURING OCTOBER 1983

Streamflow generally increased in Hawaii, Nevada, Idaho, Arizona, Nebraska, Missouri, and in most States east and north of Tennessee. Monthly mean flows generally decreased in southwestern Canada, Georgia, Oregon, and most gulf coastal States. Flows were variable in southeastern Canada and elsewhere in the United States.

Monthly mean flows remained in the above-normal range in parts of most western and north-central States and increased into that range in parts of Texas, Oklahoma, Montana, Nebraska, Missouri, and the lower Ohio River basin. Monthly and/or daily mean flows were highest of record for October in parts of Nova Scotia, Alaska, Arizona, California, Idaho, Nevada, and Utah. (See table on page 3.) Typical of the above-normal trend in streamflow was that of the North Fork American River at North Fork Dam in California where flow during October increased seasonally and remained in the above-normal range for the 6th consecutive month. (See graph on page 3.)

Flows remained in the below-normal range in parts of Alberta, Quebec, Nova Scotia, Maine, New York, Montana, and several southern and southeastern States. In western Kansas, the monthly mean flow of 1.20 cubic feet per second (cfs) at Saline River near Russell (drainage area, 1,502 square miles) was lowest for any month in 32 years of record. The daily mean flow of 1.00 cfs on October 20 was lowest of record for any day in October.

Severe flooding occurred early in the month in western New Mexico and in southeastern and central Arizona as a result of runoff from torrential rains. Parts of both States experienced record-high flows on several rivers, and many bridges on the San Francisco, Gila, San Pedro, Rillito, and Santa Cruz rivers were either closed or destroyed by the floodwaters. Damage was severe in the towns of Marana, Clifton, Hayden, Winkleman, Kearny, Willcox, Nogales, and Tucson. At least thirteen people lost their lives as a result of the flooding, and damages were estimated in the hundreds of millions of dollars. Selected data on stages, discharges, recurrence intervals, and gaging station locations are given in the accompanying map and table. (See table and map on pages 4 and 5). Later in the month, major flooding occurred from southwestern to northeastern parts of Oklahoma as a storm system associated with the remnants of Hurricane Tico dropped up to 14 inches of rain during the period October 17–20, 1983. Flows at several sites were highest of record and had recurrence intervals of 100 years or more. At least 5 persons were known dead as a result of the storm. Moderate to severe flooding was also reported in western Texas, southern Missouri, and parts of the Ohio River valley. Preliminary data on stages, discharges, recurrence intervals, and gaging station locations for selected sites in Oklahoma are given in the accompanying map and table. (See map and table on pages 4 and 5.) In Texas, the remnants of Hurricane Tico brought rainfall to the entire drought-stricken area of west Texas. As much as 4 inches fell over some counties where severe drought conditions had existed for many months. As the storm system moved eastward, runoff from heavy rains of up to 5 inches on October 20, 1983, caused sharp rises on small streams tributary to the Ohio River.

In northern Utah, Great Salt Lake was on its way to another possible record-breaking year. The elevation of 4,204.95 feet above mean sea level on October 31, 1983, was only 0.05 foot less than the June 30, 1983, peak of 4,205.00 feet. The elevation on October 31, 1983, was 4.25 feet higher than a year ago and 0.35 foot higher than last month.

Contents of selected reservoirs in parts of Texas and several northeastern States were below average at end of October. Elsewhere in the Nation and in southeastern Canada, near to well above-average reservoir contents were reported.

The combined flow of the three largest rivers in the lower 48 states—Mississippi, St. Lawrence, and Columbia rivers—was 610,000 cubic feet per second, 5 percent below the long term average and 2 percent below last month. These three large river systems, which include the flow of the Missouri and Ohio rivers account for runoff from more than half of the conterminous United States, and provide a quick, useful check on the status of the Nation's surface-water resources.

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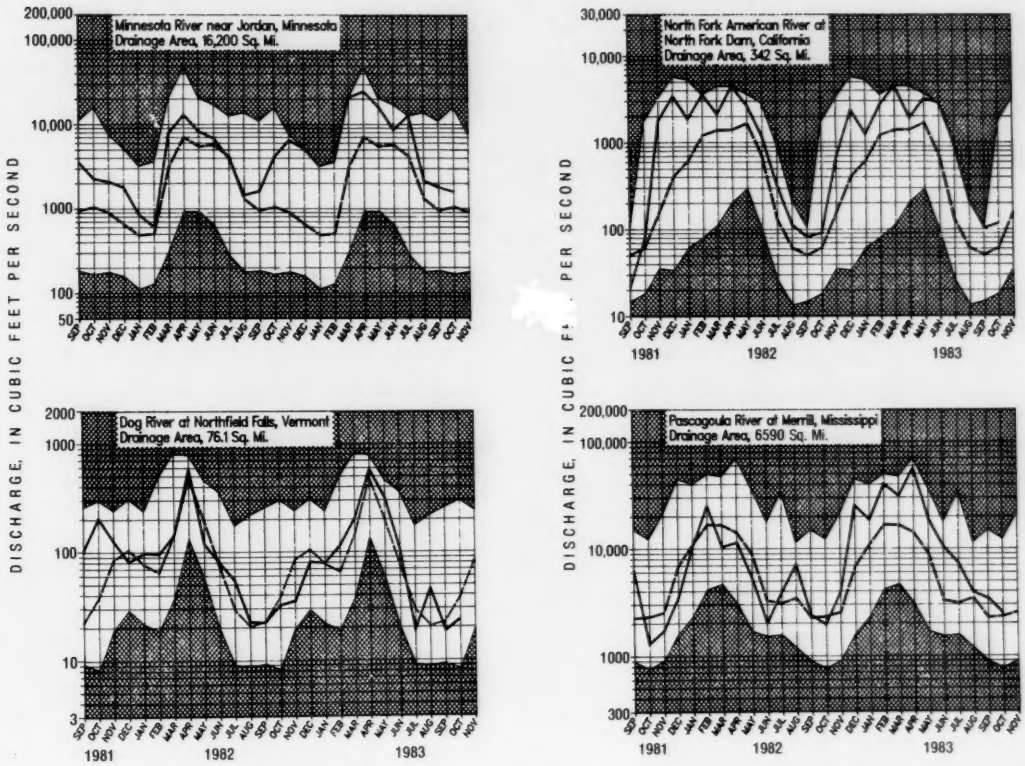
SURFACE WATER – MONTHLY MEAN DISCHARGE IN KEY STREAMS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951–80. Heavy line indicates mean for current period.


DISCHARGE, IN CUBIC FEET PER SECOND
Minnesota River near Jordan, Minnesota
Drainage Area, 16,200 Sq. Mi.
North Fork American River at
North Fork Dam, California
Drainage Area, 342 Sq. Mi.
Dog River at Northfield Falls, Vermont
Drainage Area, 76.1 Sq. Mi.
Pascagoula River at Merrill, Mississippi
Drainage Area, 6590 Sq. Mi.
1981
1982
1983

Provisional data, subject to revision

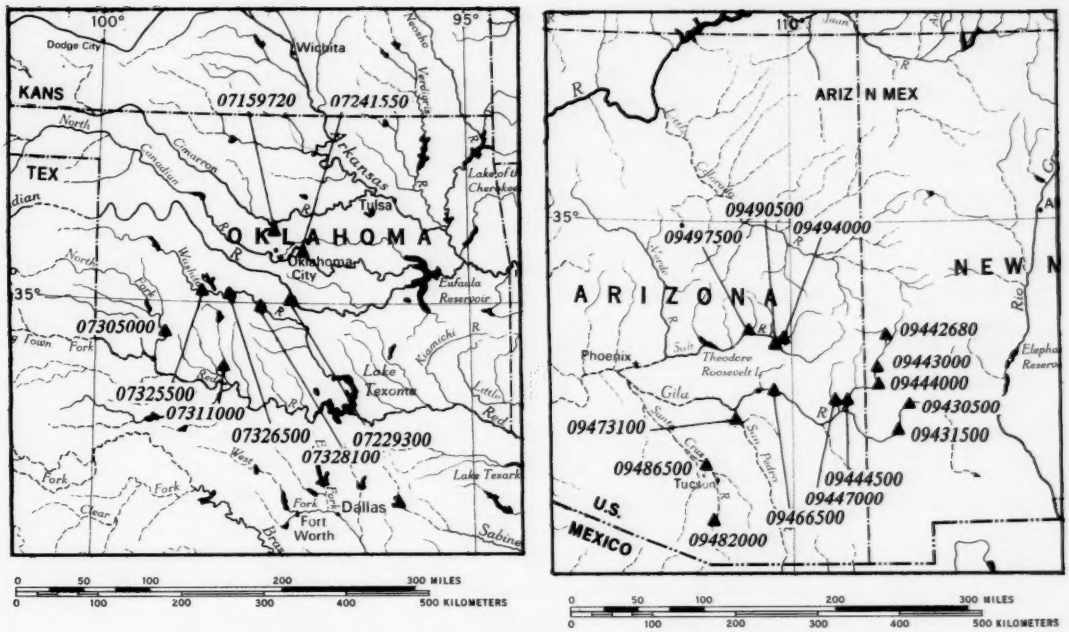
NEW EXTREMES DURING OCTOBER 1983 AT STREAMFLOW INDEX STATIONS

Station number	Stream and place of determination	Drainage area (square miles)	Years of record	Previous October extremes (period of record)		October 1983			
				Monthly mean in cfs (year)	Daily mean in cfs (year)	Monthly mean in cfs	Percent of median	Daily mean in cfs	Day
	HIGH FLOWS								
01FB001	Northeast Margaree River at Margaree Valley, Nova Scotia, Canada.	142	64	1,060 (1931)	880 (1922)	876	187	5,160	24
09315000	Green River at Green River, Utah.	40,600	84	5,169 (1941)	12,000 (1928)	6,876	240	7,840	4
09430500	Gila River near Gila, New Mexico.	1,864	56	994 (1972)	9,030 (1972)	931	1,583	9,380	3
09448500	Gila River at head of Safford Valley, near Solomon, Arizona.	7,896	69	4,612 (1972)	45,100 (1972)	6,217	4,746	86,000	2
10322500	Humboldt River at Palisade, Nevada.	5,010	76	135 (1904)	179 (1975)	265	679	300	31
11098000	Arroyo Seco near Pasadena, California.	16.0	73	7.32 (1934)	79 (1934)	10.9	1,514	76	5
13037500	Snake River near Heise, Idaho. . . .	5,752	73	5,335 (1972)	....	5,920	158	.....	...
15290000	Little Susitna River near Palmer, Alaska.	61.9	35	210 (1972)	464 (1979)	391	352	944	11
	LOW FLOWS								
06867000	Saline River near Russell, Kansas.	1,502	32	1.87 (1978)	1.40 (1978)	1.20	6	1.0	20
50112500	Rio Inabon at Real Abajo, Puerto Rico.	9.7	17	15.4 (1982)	3.8 (1967)	34.9	71	2.5	2

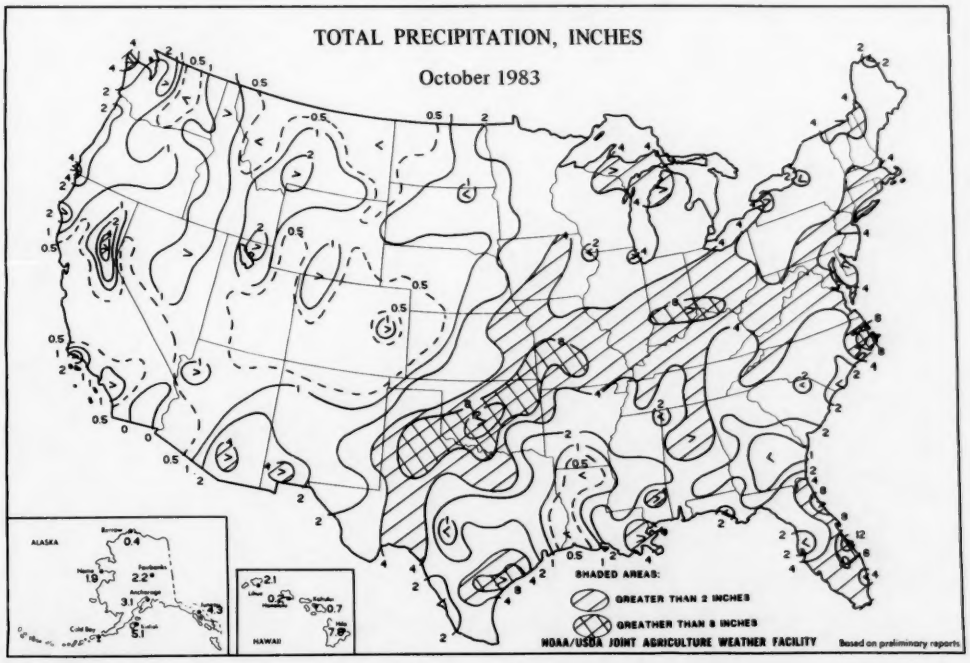
FLOOD DATA FOR SELECTED SITES IN OKLAHOMA, NEW MEXICO, AND ARIZONA, OCTOBER 1983

WRD station number	Stream and place of determination	Drainage area (square miles)	Period of known floods (years)	Maximum flood previously known			Maximum during present flood				
				Date	Stage (feet)	Discharge (cfs)	Date	Stage (feet)	Discharge		Recurrence interval (years)
									Cfs	Cfs per square mile	
	OKLAHOMA										
	ARKANSAS RIVER BASIN										
07159720	Cottonwood Creek near Navina.	247	6	May 30, 1980	22.43	12,300	Oct. 21	24.03	(a)	.....	.....
07229300	Walnut Creek at Purcell ...	202	18	May 23, 1975	16.80	27,200	20	21.40	(a)	.....	.....
07241550	North Canadian River near Harrah.	13,501	15	Nov. 5, 1974	17.93	6,920	21	19.8	(a)	.....	.....
	RED RIVER BASIN										
07305000	North Fork Red River near Headrick.	4,244	47	May 28, 1977	17.26	35,000	21	17.22	55,000	13	100
07311000	East Cache Creek near Walters.	675	39	May 18, 1951	29.72	28,200	21	30.81	62,000	92	>100
07325500	Washita River at Carnegie..	3,129	45	May 18, 1949	26.21	50,000	21	26.67	37,500	12	50
07326500	Washita River at Anadarko.	3,656	28	May 25, 1903	26.8	29,000	21	25.00	45,000	8	50
07328100	Washita River at Alex	4,787	19	May 7, 1969	17.83	9,350	21	24.90	(a)	.....	.....
	NEW MEXICO										
	GILA RIVER BASIN										
09430500	Gila River near Gila	1,864	56	Dec. 18, 1978	12.5	32,400	Oct. 2	8.70	15,500	8.3	40
09431500	Gila River near Redrock ..	2,829	67	Dec. 19, 1978	29.8	48,800	2	19.3	26,400	9.3	50
09442680	San Francisco River near Reserve.	350	25	Oct. 20, 1972	7.47	11,900	2	11.3	43,000	123	>100
09443000	San Francisco River near Alma.	1,546	19	Oct. 20, 1972	18.16	30,600	2	21.45	76,000	49	>100
09444000	San Francisco River near Glenwood.	1,653	56	Oct. 20, 1972	16.61	24,000	2	18.3	28,000	17	>100
	ARIZONA										
	GILA RIVER BASIN										
09444500	San Francisco River at Clifton.	2,766	59	Oct. 20, 1972	17.0	64,000	Oct. 1	19.6	91,600	33	>100
09447000	Eagle Creek above pumping plant, near Mcrenci.	613	39	Dec. 18, 1978	12.5	24,500	2	13.0	30,000	49	85
09466500	Gila River at Calva	11,470	54	Dec. 19, 1978	15.20	100,000	2	22.2	150,000	13	>100
09473100	San Pedro River below Aravaipa Creek near Mammoth.	4,360	6	1926	....	85,000	2	17.9	115,000	26	.....
09482000	Santa Cruz River at Continental.	1,682	38	Oct. 9, 1977	16.70	26,500	2	16.5	45,000	27	>100
09486500	Santa Cruz River at Cortaro.	3,503	40	Oct. 10, 1977	15.6	23,000	2	16.47	45,000	13	>100
09490500	Black River near Fort Apache.	1,232	29	Dec. 18, 1978	24.05	40,200	2	24.9	45,000	37	50
09494000	White River near Fort Apache.	632	27	Dec. 18, 1978	15.71	14,600	2	13.0	9,000	14	20
09497500	Salt River near Chrysotile..	2,849	59	Dec. 18, 1978	17.35	70,400	2	15.7	56,500	20	30

[a]Discharge not determined.



Location of stream gaging stations in Oklahoma, New Mexico and Arizona, described in table of peak stages and discharges on page 4.



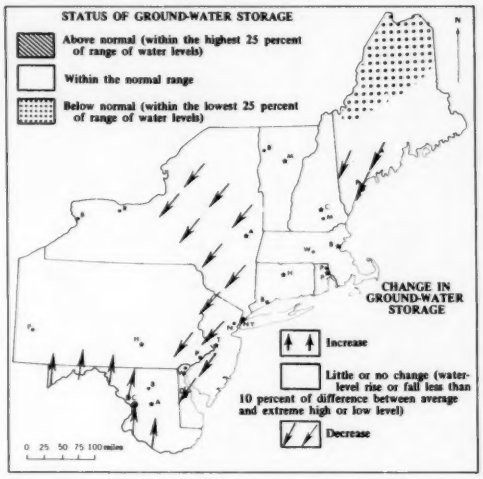
(From Weekly Weather and Crop Bulletin published by National Weather Service and Department of Agriculture.)

GROUND-WATER CONDITIONS DURING OCTOBER 1983

The prevailing downward trend of ground-water levels in recent months was slowed or reversed in much of the Northeast Region during October as a result of seasonal recharge, especially in areas of substantial precipitation, such as central and western Maryland. (See map.) Levels remained near average for this time of the year in most of the region.

In the southeastern States, ground-water levels rose in most of West Virginia and declined in Virginia, North Carolina, and Mississippi, and declined or held steady in Georgia. Trends were mixed in Kentucky, Arkansas, and Louisiana. Water levels were above average in Kentucky, and mostly above average in West Virginia. Levels were below average in Virginia and Arkansas, and were mixed with respect to average in North Carolina and Louisiana.

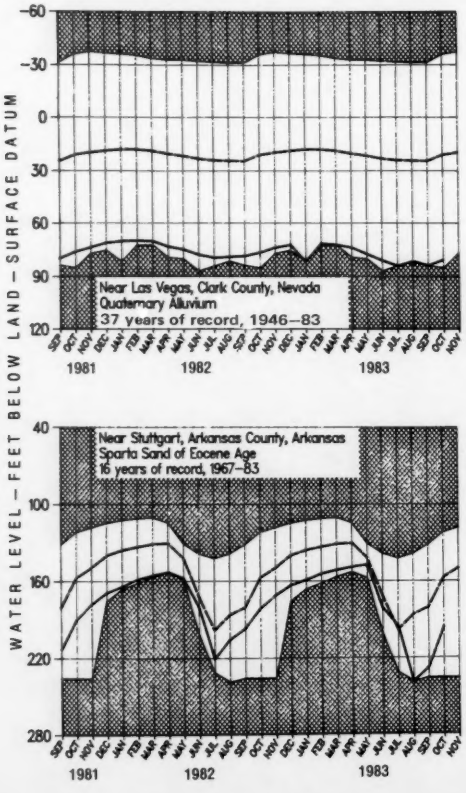
In the central and western Great Lakes States, ground-water levels rose and were above average in Michigan, Indiana, and Iowa, and in the key well in Princeton,

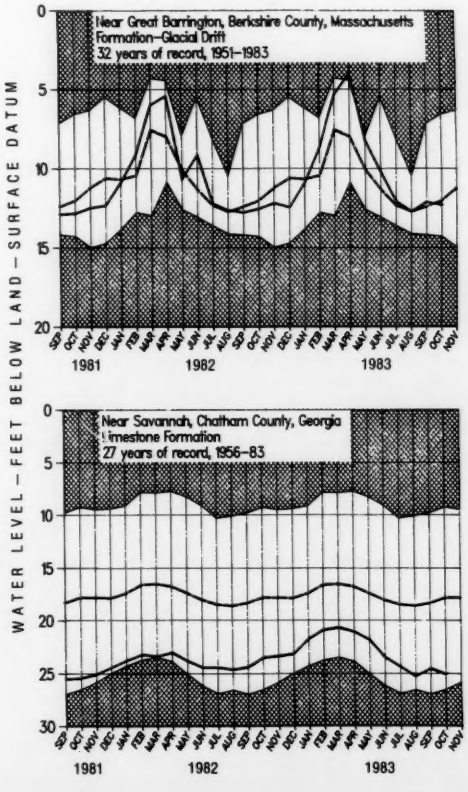

STATUS OF GROUND-WATER STORAGE
Above normal (within the highest 25 percent of range of water levels)
Within the normal range
Below normal (within the lowest 25 percent of range of water levels)
N
CHANGE IN GROUND-WATER STORAGE
Increase
Little or no change (water-level rise or fall less than 10 percent of difference between average and extreme high or low level)
Decrease
0 25 50 75 100 miles

Map shows ground-water storage near end of October and change in ground-water storage from end of September to end of October.

MONTH-END GROUND-WATER LEVELS IN KEY WELLS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates average of monthly levels in previous years. Heavy line indicates level for current period.


WATER LEVEL – FEET BELOW LAND – SURFACE DATUM
Near Las Vegas, Clark County, Nevada
Quaternary Alluvium
37 years of record, 1946–83
Near Stuttgart, Arkansas County, Arkansas
Sparta Sand of Eocene Age
16 years of record, 1967–83
1981
1982
1983



WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN THE CONTERMINOUS UNITED STATES—OCTOBER 1983

Aquifer and location	Water level in feet with reference to land-surface datum	Departure from average in feet	Net change in water level in feet since:		Year records began	Remarks
			Last month	Last year		
Glacial drift at Hanska, south-central Minnesota	-11.82	-3.20	-1.09	-6.75	1943	
Glacial drift at Roscommon in north-central part of Lower Peninsula, Michigan	-3.87	+1.15	+0.56	+0.88	1935	
Glacial drift at Marion, Iowa	-5.40	+1.52	+0.78	+1.42	1941	
Glacial drift at Princeton in northwestern Illinois	-10.24	+4.27	-0.11	+1.48	1943	
Petersburg Granite, southeastern Piedmont near Fall Zone, Colonial Heights, Virginia	-17.16	-0.87	-0.09	-0.39	1939	
Glacial outwash sand and gravel, Louisville, Kentucky	-17.68	+8.19	+0.04	+1.12	1946	
500-foot sand aquifer near Memphis, Tennessee (U.S. well no. 2)	-103.63	-14.99	-0.29	+0.06	1941	
Granite in eastern Piedmont Province, Chapel Hill, North Carolina	-41.10	+2.02	-0.40	+0.46	1931	
Sparta Sand in Pine Bluff industrial area, Arkansas	-238.20	-34.43	-1.40	-2.65	1958	
Limestone aquifer on Cockspur Island, Savannah area, Georgia	-25.05	-7.10	-0.55	-1.60	1956	
Sand and gravel in Puget Trough, Tacoma, Washington	-111.18	-4.94	-0.40	-6.30	1952	
Pleistocene glacial outwash gravel, North Pole, northern Idaho (U.S. well no. 3)	-455.0	+4.7	-0.4	+2.4	1929	
Snake River Group: southwestern Snake River Plain aquifer, at Eden, Idaho	-121.5	-7.1	+0.4	+1.0	1957	
Terrace gravel at Missoula, Montana	-11.20	+4.17	+4.10	+3.99	1960	October high.
Alluvial sand and gravel, Platte River Valley, Nebraska (U.S. well no. 6)	-5.95	+0.60	+0.07	-1.89	1935	
Alluvial valley fill in Steptoe Valley, Nevada	-10.41	+3.20	+0.31	+0.63	1950	October high.
Ogallala Formation, Kansas Agricultural Experiment Station at Colby in the High Plains of northwestern Kansas	-127.20	-9.71	+0.37	-2.18	1947	October low.
Alluvium and Paso Robles, clay, sand, and gravel, Santa Maria Valley, California	-114.45	+25.78	+9.36	+13.50	1957	October high.
Valley fill, Elfrida area, Douglas, Arizona (U.S. well no. 15)	-109.7	-31.28	+2.3	+3.6	1951	
Berrendo-Smith well in San Andres Limestone, Roswell artesian basin of Pecos Valley, New Mexico (U.S. well no. 1-A)	-61.95	-0.12	+5.49	+0.08	1966	
Hueco bolson, El Paso area, Texas	-261.04	-15.58	+2.42	-0.48	1965	October low.
Evangeline aquifer, Houston area, Texas	-316.95	-13.03	+2.79	+14.25	1965	

Illinois. Levels rose and were near average in Wisconsin. There were mixed trends in Minnesota, where levels were above and below average, and in Ohio, where levels were in the normal range.

In the Western States, ground-water levels rose in Nebraska and Nevada, and declined in Washington; trends were mixed in other States. Water levels were above average in Nebraska and southern California, and below average in North Dakota, Kansas, and New Mexico; levels were mixed with respect to average in other States. New high ground-water levels for October occurred in Montana, southern California, Nevada, and Utah. New lows for October were recorded in Montana, Kansas, and Texas. New alltime lows were reached in Arizona and in New Mexico. The level in the Avra Valley key well in Arizona equaled the new alltime low level reached in March 1983, and again in August 1983; these levels are part of a 20-year period of record beginning in 1963.

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OCTOBER 1983

[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum (acre-feet)[a]
	End of Oct. 1983	End of Oct. 1982	Average for end of Oct.	End of Sept. 1983	
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	31	38	35	41	[b]226,300
QUEBEC					
Allard (P)	59	83	59	76	280,600
Gouin (P)	75	49	68	76	6,954,000
MAINE					
Seven reservoir systems (MP)	44	45	53	56	4,098,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	53	67	74	75	76,450
Lake Francis (FPR)	58	71	76	67	99,310
Lake Winnipesaukee (PR)	60	66	57	62	165,700
VERMONT					
Harriman (P)	56	63	61	67	116,200
Somerset (P)	41	66	69	48	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	62	76	71	65	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	49	47	54	61	786,700
Indian Lake (FMP)	74	73	56	84	103,300
New York City reservoir system (MW)	55	59	...	65	1,680,000
NEW JERSEY					
Wanaque (M)	63	71	63	68	85,100
PENNSYLVANIA					
Allegheny (FPR)	41	38	33	39	1,180,000
Pymatuning (FMR)	98	87	78	82	188,000
Raystown Lake (FR)	65	66	53	61	761,900
Lake Wallenpaupack (PR)	61	63	48	56	157,800
MARYLAND					
Baltimore municipal system (M)	82	68	84	84	261,900
NORTH CAROLINA					
Bridgewater (Lake James) (P)	91	90	81	91	288,800
Narrows (Badin Lake) (P)	76	90	95	77	128,900
High Rock Lake (P)	53	58	58	55	234,800
SOUTH CAROLINA					
Lake Murray (P)	72	82	63	77	1,614,000
Lakes Marion and Moultrie (P)	80	83	66	76	1,862,000
SOUTH CAROLINA--GEORGIA					
Clark Hill (FP)	59	66	54	70	1,730,000
GEORGIA					
Burton (PR)	92	93	67	91	104,000
Sinclair (MPR)	90	72	76	86	214,000
Lake Sidney Lanier (FMPR)	50	58	52	52	1,686,000
ALABAMA					
Lake Martin (P)	86	88	67	89	1,375,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	30	34	33	33	2,229,300
Douglas Lake (FPR)	27	23	23	29	1,394,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	45	56	49	63	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	40	49	39	22	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	46	54	48	51	1,478,000
WISCONSIN					
Chippewa and Flambeau (PR)	89	94	78	85	365,000
Wisconsin River (21 reservoirs) (PR)	90	95	64	76	399,000
MINNESOTA					
Mississippi River headwater system (FMR)	32	34	29	31	1,640,000
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	89	92	89	92	22,700,000
SOUTH DAKOTA					
Angostura (I)	72	85	72	71	127,600
Belle Fourche (I)	40	72	36	33	185,200
Lake Francis Case (FIP)	60	68	57	71	4,834,000
Lake Oahe (FIP)	88	85	...	92	22,530,000
Lake Sharpe (FIP)	101	101	95	99	1,725,000
Lewis and Clarke Lake (FIP)	93	92	95	92	477,000
NEBRASKA					
Lake McConaughy (IP)	87	78	67	81	1,948,000
OKLAHOMA					
Eufaula (FPR)	101	78	84	76	2,378,000
Keystone (FPR)	104	74	85	82	661,000
Tenkiller Ferry (FPR)	86	88	89	87	628,200
Lake Altus (FIMR)	48	53	47	28	133,000
Lake O'The Cherokees (FPR)	94	82	81	77	1,492,000
OKLAHOMA--TEXAS					
Lake Texoma (FMPRW)	110	89	93	84	2,722,000
TEXAS					
Bridgeport (IMW)	78	91	46	78	386,400
Canyon (FMR)	90	92	74	90	385,600
International Amistad (FIMPW)	76	89	87	73	3,497,000
International Falcon (FIMPW)	44	75	78	41	2,668,000
Livingston (IMW)	101	100	81	100	1,788,000
Possum Kingdom (IMPRW)	82	90	100	79	570,200
Red Bluff (PI)	12	14	27	10	307,000
Toledo Bend (P)	86	85	77	87	4,472,000
Twin Buttes (FIM)	22	37	31	21	177,800
Lake Kemp (IMW)	110	80	85	61	268,000
Lake Meredith (FWM)	45	49	38	46	796,900
Lake Travis (FIMPRW)	79	76	80	81	1,144,000
MONTANA					
Canyon Ferry (FIMPR)	95	88	88	91	2,043,000
Fort Peck (FPR)	87	86	86	87	18,910,000
Hungry Horse (FIPR)	36	88	88	90	3,451,000
WASHINGTON					
Ross (PR)	83	93	86	93	1,052,000
Franklin D. Roosevelt Lake (IP)	100	100	102	97	5,022,000
Lake Chelan (PR)	76	81	74	93	676,100
Lake Cushman (PR)	49	64	86	79	359,500
Lake Merwin (P)	101	104	86	100	245,600
IDAHO					
Boise River (4 reservoirs) (FIP)	62	61	47	62	1,235,000
Coeur d'Alene Lake (P)	62	62	54	85	238,500
Pend Oreille Lake (FP)	59	81	70	90	1,561,000
IDAHO--WYOMING					
Upper Snake River (8 reservoirs) (MP)	76	80	50	74	4,401,000
WYOMING					
Boysen (FIP)	88	98	83	91	802,000
Buffalo Bill (IP)	78	96	74	79	421,300
Keyhole (F)	26	25	44	26	193,800
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	69	52	44	67	3,056,000
COLORADO					
John Martin (FIR)	19	4	10	23	364,400
Taylor Park (IR)	65	68	54	77	106,200
Colorado–Big Thompson project (I)	55	56	54	85	722,600
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)	96	92	...	98	31,620,000
UTAH--IDAHO					
Bear Lake (IPR)	88	87	58	93	1,421,000
CALIFORNIA					
Folsom (FIP)	70	74	54	45	1,000,000
Hetch Hetchy (MP)	82	92	49	91	360,400
Isabella (FIR)	61	57	23	71	568,100
Pine Flat (FI)	79	71	38	87	1,001,000
Clair Engle Lake (Lewiston) (P)	85	84	69	89	2,438,000
Lake Almanor (P)	91	87	50	93	1,036,000
Lake Berryessa (FIMW)	90	89	74	91	1,600,000
Millerton Lake (FI)	61	68	33	75	503,200
Shasta Lake (FIPR)	78	78	64	83	4,377,000
CALIFORNIA--NEVADA					
Lake Tahoe (IPR)	84	90	48	88	744,600
NEVADA					
Rye Patch (I)	92	71	52	93	194,300
ARIZONA--NEVADA					
Lake Mead and Lake Mohave (FIMP)	95	87	70	97	27,970,000
ARIZONA					
San Carlos (IP)	86	8	14	51	1,073,000
Salt and Verde River system (IMPR)	80	65	37	81	2,019,100
NEW MEXICO					
Conchas (FIR)	68	72	80	73	330,100
Elephant Butte and Caballo (FIPR)	53	35	26	52	2,453,000

[a]1 acre-foot = 0.0436 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second day.
[b]Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

FLOW OF LARGE RIVERS DURING OCTOBER 1983

Station number	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1980 (cubic feet per second)	October 1983					
				Monthly mean discharge (cubic feet per second)	Percent of median monthly discharge, 1951–80	Change in discharge from previous month (percent)	Discharge near end of month		
							Cubic feet per second	Million gallons per day	Date
01014000	St. John River below Fish River at Fort Kent, Maine	5,690	9,647	4,061	84	+64	2,200	1,420	31
01318500	Hudson River at Hadley, N.Y	1,664	2,909	1,200	85	+87	1,000	600	31
01357500	Mohawk River at Cohoes, N.Y	3,456	5,734	1,400	54	+17	1,200	780	31
01463500	Delaware River at Trenton, N.J	6,780	11,750	4,011	82	+18	3,620	2,339	31
01570500	Susquehanna River at Harrisburg, Pa	24,100	34,530	5,700	53	+38	8,280	5,351	26
01646500	Potomac River near Washington, D.C.	11,560	[1] 11,490	5,440	191	+164	6,210	4,013	31
02105500	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	5,005	1,200	60	+14	1,700	1,100	31
02131000	Pee Dee River at Peedee, S.C	8,830	9,851	3,480	75	+13	3,840	2,481	28
02226000	Altamaha River at Doctortown, Ga	13,600	13,880	2,936	57	-8	2,710	1,751	31
02320500	Suwannee River at Branford, Fla	7,880	6,987	4,030	88	-18	3,420	2,210	31
02358000	Apalachicola River at Chattahoochee, Fla	17,200	22,570	12,800	117	-4	13,500	8,730	31
02467000	Tombigbee River at Demopolis lock and dam near Coatopa, Ala	15,400	23,300	2,696	69	-34	2,100	1,360	31
02489500	Pearl River near Bogalusa, La	6,630	9,768	2,769	130	-12	2,600	1,680	31
03049500	Allegheny River at Natrona, Pa	11,410	[1] 19,480	5,444	77	+31	6,500	4,200	24
03085000	Monongahela River at Braddock, Pa.	7,337	[1] 12,510	3,608	93	+40	5,400	3,490	24
03193000	Kanawha River at Kanawha Falls, W. Va	8,367	12,590	6,427	106	+120	26,300	17,000	25
03234500	Scioto River at Higby, Ohio	5,131	4,547	2,310	304	+198	2,190	1,415	31
03294500	Ohio River at Louisville, Ky[2]	91,170	116,000	67,500	190	+250	140,300	90,680	27
03377500	Wabash River at Mount Carmel, Ill	28,635	27,220	9,667	140	+113	22,500	14,540	28
03469000	French Broad River below Douglas Dam, Tenn	4,543	6,798	3,084	82	+34	.....	.....	...
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wis[2]	6,150	4,163	4,216	189	+10	2,969	1,918	28
04264331	St. Lawrence River at Cornwall, Ontario–near Massena, N.Y[3]	299,000	242,700	272,190	107	-2	274,000	177,100	31
050115	St. Maurice River at Grand Mere, Quebec	16,300	25,150	13,000	68	+301	14,900	9,630	31
05082500	Red River of the North at Grand Forks, N. Dak	30,100	2,551	2,062	153	-19	3,170	2,048	20
05133500	Rainy River at Manitou Rapids, Minn.	19,400	12,830	16,500	152	+30	18,600	12,020	26
05330000	Minnesota River near Jordan, Minn.	16,200	3,402	1,614	154	-9	1,960	1,266	31
05331000	Mississippi River at St. Paul, Minn	36,800	[1] 10,610	10,577	162	+30	12,700	8,208	31
05365500	Chippewa River at Chippewa Falls, Wis	5,600	5,100	7,296	263	+1	3,300	2,130	31
05407000	Wisconsin River at Muscoda, Wis	10,300	8,617	9,940	183	+31	7,476	4,831	31
05446500	Rock River near Joslin, Ill	9,551	5,873	3,730	113	0	4,500	2,910	26
05474500	Mississippi River at Keokuk, Iowa	119,000	62,620	68,468	194	+19	72,500	46,860	31
06214500	Yellowstone River at Billings, Mont	11,796	7,038	6,408	152	+42	5,850	3,780	27
06934500	Missouri River at Hermann, Mo	524,200	79,490	61,710	103	+10	67,200	43,430	27
07289000	Mississippi River at Vicksburg, Miss[4]	1,140,500	576,600	258,000	89	+5	343,000	221,700	28
07331000	Washita River near Dickson, Okla.	7,202	1,368	7,323	1,411	+3,562	20,000	13,000	25
08276500	Rio Grande below Taos Junction Bridge, near Taos, N. Mex	9,730	725	259	94	+5	250	161	31
09315000	Green River at Green River, Utah.	40,600	6,298	6,876	240	+15	4,580	2,960	29
11425500	Sacramento River at Verona, Calif	21,257	18,820	18,403	173	-14	14,100	9,110	25
13269000	Snake River at Weiser, Idaho	69,200	18,050	21,120	145	+43	24,120	15,589	26
13317000	Salmon River at White Bird, Idaho	13,550	11,250	6,460	130	+9	6,530	4,220	27
13342500	Clearwater River at Spalding, Idaho	9,570	15,480	4,610	114	+80	4,760	3,076	27
14105700	Columbia River at The Dalles, Oreg[5]	237,000	193,100	79,800	87	-18	119.700	77,360	30
14191000	Willamette River at Salem, Oreg.	7,280	23,510	4,740	69	-6	14,400	9,310	30
15515500	Tanana River at Nenana, Alaska.	25,600	23,460	18,419	119	-49	12,000	7,800	31
8MF005	Fraser River at Hope, British Columbia	83,800	96,290	51,906	71	-34	80,507	52,033	31

[1] Adjusted.
[2] Records furnished by Corps of Engineers.
[3] Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4] Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5] Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

DISSOLVED SOLIDS AND WATER TEMPERATURES FOR OCTOBER 1983 AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	October data of following calendar years	Stream discharge during month	Dissolved-solids concentration during month[a]		Dissolved-solids discharge during month[a]			Water temperature during month[b]		
			Mean (cfs)	Minimum (mg/L)	Maximum (mg/L)	Mean	Minimum	Maximum	Mean in°C	Minimum, in°C	Maximum, in°C
						(tons per day)					
	NORTHEAST										
01463500	Delaware River at	1983	4,011	108	125	1,261	932	2,769	16.0	10.0	21.0
	Trenton, N.J.	1945–82	6,717	58	156	.....	463	8,300	...	8.5	25.5
	(Morrisville, Pa.)	(Extreme yr)		(1945)	(1953)		(1963)	(1955)			
			[c]4,918								
04264331	St. Lawrence River at	1983	272,000	166	166	122,000	120,000	124,000	16.0	13.5	19.5
	Cornwall, Ontario, near	1976–82	288,400	164	168	129,000	115,000	138,000	13.0	0	17.0
	Massena, N.Y.	(Extreme yr)		(1981–82)	(1975–77)		(1978, 82)	(1977)			
	median streamflow at		[c]253,600								
	Ogdensburg, N.Y.										
	SOUTHEAST										
07289000	Mississippi River at	1983	257,500	294	337	212,000	167,000	359,000	20.5	18.0	22.5
	Vicksburg, Miss.	1976–82	367,100	183	309	229,000	117,000	356,000	20.0	15.0	26.0
		(Extreme yr)		(1979, 82)	(1981)		(1976)	(1979)			
			[c]295,000								
	WESTERN GREAT LAKES REGION										
03612500	Ohio River at lock and dam	1983	*96,700	157	264	.....	19,000	148,000	...	...	...
	53, near Grand Chain, Ill.	1955–82	119,700	135	330	.....	15,000	262,000	...	12.0	26.0
	(25 miles west of Paducah,	(Extreme yr)		(1960, 63)	(1967)		(1973)	(1976)			
	Ky.; streamflow station		[c]96,680								
	at Metropolis, Ill.)										
	MIDCONTINENT										
06934500	Missouri River at Hermann,	1983	61,800	436	512	80,200	70,900	98,800	17.0	13.0	21.0
	Mo. (60 miles west of St.	1976–82	63,420	236	558	72,400	51,800	142,000	16.0	10.0	22.5
	Louis, Mo.)	(Extreme yr)		(1977)	(1980)		(1976)	(1975)			
			[c]60,140								
	WEST										
14128910	Columbia River at	1983	115,000	98	108	31,800	23,900	45,800	15.5	14.0	17.0
	Warrendale, Oreg.	1976–82	116,400	73	117	30,200	13,200	48,900	16.0	13.0	19.5
	(streamflow station	(Extreme yr)		(1981)	(1977)		(1981)	(1975)			
	at The Dalles, Oreg.)		[c]91,570								

[a]Dissolved-solids concentrations when not analyzed directly, are calculated on basis of measurements of specific conductance.
[b]To convert °C to °F: [(1.8 X°C) + 32] = °F.
[c]Median of monthly values for 30-year reference period, water years 1951–80, for comparison with data for current month.
*Dissolved-solids records were computed from intermittent data during the month.

NATIONAL WATER CONDITIONS

October 1983

Based on reports from the Canadian and U.S. Field offices; completed November 9, 1983

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EXPLANATION OF DATA

Cover map shows generalized pattern of streamflow for the month based on 18 index stream-gaging stations in Canada and 164 index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations that are located near the points shown by the arrows.

Streamflow for the current month is compared with flow for the same month in the 30-year reference period, 1951–80. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile). Shorter reference periods are used for the Puerto Rico index stations because of the limited records available.

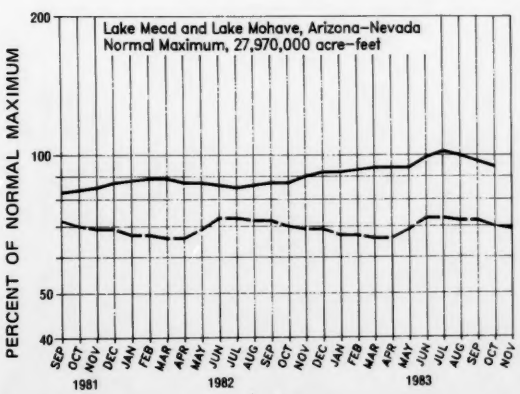
Flow higher than the lower quartile but lower than the upper quartile is described as being *within the normal range*. In the National Water Conditions, the median is obtained by ranking the 30 flows for each month of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the median. One-half of the time you would expect the flows for the month to be below the median and one-half of the time to be above the median.

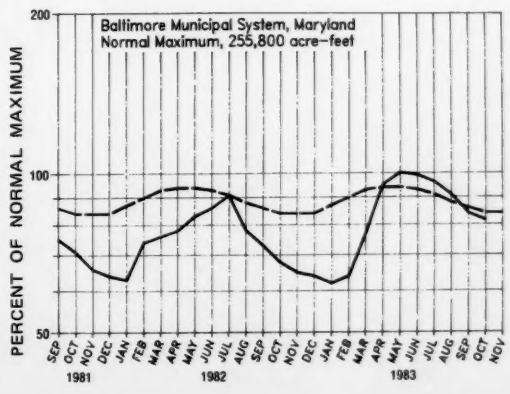
Statements about *ground-water levels* refer to conditions near the end of the month. The water level in each key observation well is compared with average level for the end of the month determined from the entire past record for that well or from a 30-year reference period, 1951–80. *Changes in ground-water levels*, unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data for October are given for six stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). Dissolved solids are minerals dissolved in water and usually consist predominantly of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. Dissolved-solids discharge represents the total daily amount of dissolved minerals carried by the stream. Dissolved-solids *concentrations* are generally higher during periods of low streamflow, but the highest dissolved-solids *discharges* occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at time of low flow.

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, SEPTEMBER 1981 TO OCTOBER 1983

Dashed line indicates average of month-end contents. Solid line indicates current period.


Lake Mead and Lake Mohave, Arizona–Nevada
Normal Maximum, 27,970,000 acre-feet
PERCENT OF NORMAL MAXIMUM
200
100
50
40
SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV
1981
1982
1983


Baltimore Municipal System, Maryland
Normal Maximum, 255,800 acre-feet
PERCENT OF NORMAL MAXIMUM
200
100
50
SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV
1981
1982
1983

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